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## Introduction

This booklet is intended for use by volunteers to report aerial, shipboard, or shoreline observations of ice conditions at sea to authorities such as the National Weather Service, National Ice Center, U.S. Coast Guard, pilots associations, port authorities, or other maritime interests. Emphasis here is on conditions of concern to mariners with regard to safe passage of ships. Scientific observers may wish to note additional details following guidance of the World Meteorological Organization.

Sea ice consists of frozen sea water. River (freshwater) ice is often indistinguishable when mixed with sea ice, especially with snow cover. Glacier ice, broken away from a tidewater glacier, is usually more irregular than river ice or frozen sea water. Tidal estuaries may also have thick, irregular pieces of sediment-laden *beach ice* or *stamukhas*, which have been grounded on tidelands, repeatedly submerged, and floated free by spring tides.

Sea ice is observed in terms of three basic parameters: *concentration*, *stage* of development, and *form*. Concentration refers to the fraction of the sea surface covered by ice, reported in tenths by international convention. Stage of development refers to age and structural characteristics of the ice that may be inferred from specific visible features and knowledge of regional conditions prior to the observation. Stage may be more directly observed from shipboard when ice breaking reveals the prevailing thickness of the ice. Stage classification does not apply to glacier ice. Form refers to the horizontal shape and dimensions of pieces of ice. The form of glacier ice is also reported in terms of *freeboard*, or maximum height above the sea surface.

Observers should report sea ice conditions with reference to the date, time, and geographical position of the observation and the particular perspective, or *field of view*. The field of view from an airplane is much different from the field of view from the bridge of a ship or from the shoreline. A reporting form for sea ice and a separate form for glacier ice are provided to aid observers in noting this essential information.

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## U.S. Sea Ice Reporting Agencies

### **National Weather Service**

Alaska Region, Forecast Office

6930 Sand Lake Road

Anchorage, Alaska 99502-1845

Ice Desk: 907/266-5113

Marine Desk (24 hours): 907/266-5106

Fax: 907/266-5188

Web page: <http://www.alaska.net/~nwsar/>

### **National Ice Center**

Federal Office Building #4, Room 2301

4251 Suitland Road

Washington, D.C. 20395

Telephone: 301/457-5303

Fax: 301/457-5305

email: [liaison@natice.noaa.gov](mailto:liaison@natice.noaa.gov)

Web page: <http://www.natice.noaa.gov>